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through the different grades of intersexes to a male, or, vice versa, from a male to the female, is characterized by a definite intermediate step of wing-pigmentation. The color of the pigment is constant but its quantity is variable. And one sees at first sight that in the different intersexes a certain amount of pigment-producing oxydase, parallel to the quantitative behavior of the sex factors, is furnished by the veins, varying from 0 per cent. in the female to 100 per cent. in the male. If a male is becoming intersexual, white cunei appear between the veins on the brown wing. Their position and shape is irregular. The total unpigmented area in different animals of the same constitution, is, however, approximately the same. With growing intersexuality—as measured by all organs of the animal—the white spots become larger. And an inspection of the wings shows immediately that there must be present an amount of pigment or, more correctly, of oxydase, quantitatively fixed, and corresponding to the quantitative value of $m - f$; and that the given quantity (or concentration) flows out from the veins over the wing, producing brown scales, wherever it happens to come. With increasing inter-sexuality the phenomenon becomes still clearer. A stage is reached, where a white wing shows brown, pigmented venation; in some places a short stream of pigment seems to flow out from a vein. In still more advanced intersexual males, about two thirds transformed into females, only a few pigment spots and stripes are to be found on the wings along the veins. In the female intersexes the opposite process is observed, but the details are somewhat different, showing that these depend upon the genetically given wing structure, different in both sexes.

It seems that this case is an exceedingly clear one, demonstrating the principle *ad oculos*. But it may be of even greater significance. All organs different in the two sexes are affected in some way by the intersexuality. There is some hope that it might be possible to obtain by their analysis a similar insight in the process of growth, localization, symmetry, etc., involved in morphogenesis.

But I think that it is already clear from the foregoing remarks, that we are right, when we reached, independently, the conclusion that the hereditary factor is a determiner for a given mass of ferments; and we can demonstrate it by the fact that a quantitative difference in the potency of hereditary factors causes a parallel, quantitatively different, enzyme production.

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December, 1915

EARLY MEETINGS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

TO THE EDITOR OF SCIENCE: I am greatly interested in statistics published in your issue of December 3, in regard to the oldest members of the American Association for the Advancement of Science.

While my own membership dates only from 1870, my knowledge of and interest in the association far antedates that year. It seems almost certain that I have known the association by attending its meetings longer than any other person now living.

In 1851, Professor James H. Coffin, of Lafayette College, was a guest at our home in Albany and took me to the meeting in the old capitol.

Again in 1856 he was our guest. I was then a pupil at the Albany Academy, a building of historic interest as the place where Joseph Henry installed the first telegraph. One of the sessions of the association was held in the academy park, at which the Dudley Observatory was dedicated. I well remember the delight with which we watched Professor Agassiz draw figures with both hands while he talked; also the eloquent address of Edward Everett.

WM. H. HALE

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SCIENTIFIC BOOKS

The Alligator and Its Allies. By ALBERT M. REESE, Ph.D., Professor of Zoology in West Virginia University. New York, G. P. Putnam's Sons, 1915. Pp. xi + 342. 62 figures and 28 plates.

The purpose of this volume, as stated in the preface, is "to bring together, in convenient form for the use of students of zoology, some of the more important details of the biology, anatomy and development of the Crocodilia." There are chapters on the biology of the Crocodilia, the skeleton, the muscles, the nervous system, the vascular system, the urogenital system, the respiratory system, the vascular system, and the development of the alligator, and a bibliography containing eighty-nine titles. The book is illustrated by sixty-two figures, about half of them original, and twenty-eight plates, all but six of which are original.

In the chapter on the biology of the Crocodilia, the classification and geographical distribution are briefly summarized, evidently from general works, brief notes on the characteristics of several forms are given, and twenty-nine pages are devoted to a discussion of the habits and economic importance of *Alligator mississippiensis*, principally as revealed in the writer's field work. The description of the muscular system is a translation of Bronn's account of the muscles of *Crocodylus*, with illustrations of the musculature of *Crocodylus* and *Alligator*, and the description of the nervous system is taken from Bronn and others. The description of the digestive, urogenital, respiratory, vascular and skeletal systems are original, as is the account of the embryological development of *Alligator mississippiensis*, the last being a reprint, with some alterations, of an earlier paper by the author published by the Smithsonian Institution.

The author has succeeded in his expressed purpose of making the book detailed, and it will at once find a place in the library of the comparative anatomist and herpetologist as a valuable reference work. In the opinion of the reviewer, the only serious adverse criticism which will probably be made by students is that the chapter upon the embryological development of the alligator is too detailed. A connected and more readable account of the embryology would be of more general value than will be the monotonous descriptions of sections which make up this chapter. It is stated

in the publisher's advertisement on the jacket that the book "has an assured appeal for the layman interested in natural history," but this is doubtful, for, in addition to the detailed treatment, the terminology is technical and about seven eighths of the text consists of descriptions of the anatomy and embryology.

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PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES (NUMBER 12)

THE twelfth number of volume 1 of the *Proceedings of the National Academy of Sciences* contains the following articles:

1. *Salts, Soil-Colloids and Soils*: L. T. SHARP, College of Agriculture, University of California.

New light is thrown upon the subject of salts in relation with soil-colloids. The way is opened for extensive experiments in the physical chemistry of soils, and the principles involved will be of particular significance for the subject of the applications of alkali and of fertilizer salts.

2. *The Child and the Tribe*: ALICE C. FLETCHER, Peabody Museum, Harvard University.

The rites connected with the initiation of the child into the tribal life are described with emphasis upon their significance in Indian education and philosophy.

3. *The Correlation of Potassium and Magnesium, Sodium and Iron, in Igneous Rocks*: HENRY S. WASHINGTON, Geophysical Laboratory, Carnegie Institution of Washington.

The author's earlier suggestion that soda not uncommonly tends to vary with the iron oxides while potash shows similar relations to magnesia is greatly strengthened by a compilation of analyses of igneous rocks, numbering nearly 10,000.

4. *Theorem Concerning the Singular Points of Ordinary Linear Differential Equations*: GEORGE D. BIRKHOFF, Department of Mathematics, Harvard University.